We Claim:

1. A process for delivering a protein or peptide to a muscle tissue of a patient for improving blood flow in the tissue comprising: a) injecting naked polynucleotides encoding the peptide or protein into a blood vessel lumen, *in vivo*; b) increasing extravascular volume in the muscle tissue; and, c) delivering the naked polynucleotides to extravascular muscle cells via the increased volume, wherein the polynucleotide is expressed.

2. The process of claim 1 wherein improving blood flow consists of stimulating new blood vessel formation.

3. The process of claim 1 wherein the peptide or protein consists of an angiogenic factor.

4. The process of claim 3 wherein the angiogenic factor consists of vascular endothelial growth factor.

5. The process of claim 4 wherein the vascular endothelial growth factor is selected from the list consisting of: VEGF, VEGF II, VEGF-B, VEGF-C, VEGF-D, VEGF-E, $VEGF_{121}$, $VEGF_{138}$, $VEGF_{145}$, $VEGF_{165}$, $VEGF_{189}$ and $VEGF_{206}$.

6. The process of claim 3 wherein the angiogenic factor consists of fibroblast growth factor.

7. The process of claim 6 wherein the fibroblast growth factor is selected from the list consisting of: FGF-1, FGF-1b, FGF-1c, FGF-2, FGF-2b, FGF-2c, FGF-3, FGF-3b, FGF-3c, FGF-4, FGF-5, FGF-7, FGF-9, acidic FGF and basic FGF.

8. The process of claim 1 wherein the blood vessel consists of a coronary vessel.

9. The process of claim 1 wherein the blood vessel consists of a limb artery.

10. The process of claim 1 wherein the limb artery consists of the femoral artery.

11. The process of claim 1 wherein permeability of the vessel is increased by inserting papaverine into the vessel prior to or together with the polynucleotides.

12. The process of claim 1, wherein delivery of the polynucleotide stimulates angiogenesis in the muscle tissue.

13. The process of claim 1 wherein improving blood flow consists of improving collateral blood flow.

14. The process of claim 13 wherein improving collateral blood flow consists of stimulating collateral blood vessel formation.

15. The process of claim 1 wherein the muscle tissue is affected by a vascular occlusion.

16. The process of claim 1 wherein the muscle tissue is not affected by a vascular occlusion.

17. The process of claim 1 wherein the muscle tissue is suffering from ischemia.

18. The process of claim 1 wherein the muscle tissue is not suffering from ischemia.

19. The process of claim 1 wherein the muscle tissue is heart muscle tissue.

20. The process of claim 19 wherein the heart muscle tissue is human heart muscle tissue.

21. The process of claim 19 wherein delivery of the polynucleotide improves abnormal cardiac function.

22. The process of claim 1 wherein the muscle tissue is skeletal muscle tissue.

23. The process of claim 22 wherein the skeletal muscle tissue is limb skeletal muscle tissue.

24. The process of claim 23 wherein the limb skeletal muscle tissue is human limb skeletal muscle tissue.

25. The process of claim 1 wherein the patient has peripheral vascular disease.

26. The process of claim 1 wherein the patient has peripheral arterial occlusive disease.

27. The process of claim 1 wherein the patient has peripheral-deficient vascular disease.

28. The process of claim 1 wherein the patient has myocardial ischemia.

29. The process of claim 26 wherein the patient suffers from claudication or intermittent claudication.

30. The process of claim 26 wherein delivery of the polynucleotide results in decreased pain associated with a peripheral circulatory disorder.

31. The process of claim 1 wherein the peptide or protein is secreted from the muscle cell.

32. The process of claim 1 wherein the peptide or protein stimulates vascular cell growth.

33. The process of claim 1 wherein delivery of the polynucleotide stimulates vascular cell migration.

34. The process of claim 1 wherein delivery of the polynucleotide stimulates vascular cell proliferation.

35. A process delivering polynucleotides to a muscle tissue for enhancing blood flow in the tissue comprising: a) injecting naked polynucleotides into a blood vessel lumen, *in vivo*; b) increasing extravascular volume in the muscle tissue; and, c) delivering the naked polynucleotides to extravascular cells outside of the blood vessel via the increased volume.

36. The process of claim 35 wherein the polynucleotide consists of an RNA function inhibitor.

37. The process of claim 36 wherein the RNA function inhibitor consists of siRNA.

38. The process of claim 37 wherein the siRNA blocks expression of an angiogenesis inhibitor.